

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application:

1. (currently amended) A broad spectrum neutron detector comprising a thermal neutron sensitive scintillator film interleaved with a hydrogenous light guide-thermalizing media.
2. (original) The neutron detector of claim 1 wherein the thermal neutron sensitive scintillator film comprises a material selected from the group consisting of $^6\text{Li-ZnS}$, ^{10}BN , and other alpha particle sensitive phosphors doped with $^6\text{Li-ZnS}$ or ^{10}BN .
3. (currently amended) The neutron detector of claim 1 wherein the hydrogenous light guide-thermalizing media comprises acrylic.
4. (original) The neutron detector of claim 1 wherein the thermal neutron sensitive scintillator film has a layer thickness of about 0.1 mm to about 0.5 mm.
5. (currently amended) The neutron detector of claim 1 wherein the hydrogenous light guide-thermalizing media has a layer thickness of about 0.5 cm to about 1.5 cm.
6. (original) The neutron detector of claim 1 further comprising a photo-sensor.
7. (original) The neutron detector of claim 1 further comprising a wavelength shifter.

8. (original) A portal detector comprising the neutron detector of claim 1.
9. (original) A handheld instrument comprising the neutron detector of claim 1.
10. (original) A neutron detector comprising a plurality of $^6\text{Li-ZnS}$ films optically coupled to a light guide-thermalizing media comprising a plurality of acrylic layers.
11. (original) The neutron detector of claim 10 comprising at least four $^6\text{Li-ZnS}$ films and at least five acrylic layers.
12. (original) The neutron detector of claim 10 wherein each of the $^6\text{Li-ZnS}$ films has a thickness of about 0.1 mm to about 0.5 mm.
13. (original) The neutron detector of claim 10 wherein each of the high density polyethylene layers has a thickness of about 0.5 cm to about 1.5 cm.
14. (original) The neutron detector of claim 10 further comprising a photo-sensor.
15. (original) The neutron detector of claim 10 further comprising a wavelength shifter.
16. (original) A portal detector comprising the neutron detector of claim 10.
17. (original) A handheld instrument comprising the neutron detector of claim 10.

18. (original) A neutron detector comprising:

a thermal neutron sensing scintillator comprising at least four $^6\text{Li-ZnS}$ films interleaved with and optically coupled to a light guide-thermalizing media comprising at least five acrylic layers;

a reflecting surface substantially enveloping said interleaved layers, wherein said reflecting surface comprises a tapered portion extending from an end of said interleaved layers for guiding light to a narrowed section; and

a photo-sensor located at the narrowed section of the tapered portion.

19. (original) A portal detector comprising the neutron detector of claim 18.

20. (original) A handheld instrument comprising the neutron detector of claim 18.